

## Comparison of Athletes and Sedentary Students in Terms of Premenstrual Syndrome and Dysmenorrhea

### Sporcu ve Sedanter Öğrencilerin Premenstruel Sendrom ve Dismenore Açısından Karşılaştırılması

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#### ÖZ

**Amaç:** Bu çalışmada, sporcu ve sedanter öğrencilerin premenstruel sendrom ve dismenore açısından karşılaştırılması amaçlanmıştır. **Yöntem:** Çalışma tanımlayıcı bir çalışmadır. Çalışmanın örneklemini 341 öğrenci oluşturmuştur. Çalışma bir üniversitesinin Beden Eğitimi ve Spor Yüksekokulunda ve Sağlık Yüksek Okulu Hemşirelik Bölümünde 1-15 Mayıs 2016 tarihleri arasında yapılmıştır. Çalışmanın verileri Tanıtıcı Bilgi Formu, Vizuel Analog Skala(VAS) ve Premenstruel Sendrom Skalası(PMSS) kullanılarak toplanmıştır.

**Bulgular:** Sedanterler ve sporcu öğrencilerin ağırlık, medeni durum, ekonomik durum açısından benzer özelliklere sahip oldukları ancak yaş ve boy ortalamalarında farklılık olduğu saptanmıştır. Dismenore ve premenstrüel sendrom sıklığı hem sedanter hem de sporcularda yüksekti (sırasıyla %92.3, %74.6, %92.5, %72.7). Sedanter öğrencilerde PMSS puan ortalaması 118.00±40.20, sporcular da 120.93±40.76 olarak bulunmuş ve bu iki grubun ölçek puan ortalamaları arasındaki farkın anlamlı olmadığı belirlenmiştir (p>0.05). Dismenore ağrı ortalaması ise sedanter öğrencilerde 5.54±2.32 sporcu öğrencilerde 6.15±2.85 bulunmuş ve bu iki grubun ölçek puan ortalamaları arasındaki farkın anlamlı olduğu belirlenmiştir (p<0.05).

**Sonuç:** Çalışmada dismenore ağrı skorunun sporcularda daha yüksek olduğu belirlenmiştir. İki grubun PMSS puan ortalamalarının benzer olduğu görülmüştür.

**Anahtar Kelimeler:** Premenstrual sendrom, dismenore, sporcu, sedanter

#### ABSTRACT

**Objective:** In this study, it was aimed to compare athletes and sedentary students in terms of premenstrual syndrome and dysmenorrhea.

**Methods:** This is a descriptive study. The study sample consisted of 341 students. The study was carried out at Physical Education and Sports College and Nursing Department of Health College of a university between the 1<sup>st</sup> and the 15<sup>th</sup> of May, 2016. The data were collected by using an Information Form, Visual Analogue Scale and Premenstrual Syndrome Scale (PMSS).

**Results:** It was determined that sedentary and the athlete students showed similar characteristics in terms of weight, marital status and economic status but differed in terms of age and height average. Dysmenorrhea and premenstrual syndrome frequency were found to be high in both sedentary and athlete students (92.3%, 74.6%, 92.5%, 72.7%, respectively). It was found out that the mean PMSS score of the sedentary students was 118.00 ± 40.20, and the mean PMSS score of the athletes was 120.93 ± 40.76 and it was determined that the difference between the mean scores of these two groups was not significant (p>0.05). It was found out that dysmenorrhea pain score was 5.54±2.32 in sedentary students and 6.15 ± 2.85 in athlete students and it was determined that this difference between the groups was significant (p<0.05).

**Conclusion:** It was determined that dysmenorrhea pain score was higher in athletes. It was seen that PMSS scores of the two groups were similar.

**Keywords:** Premenstrual syndrome, dysmenorrhea, athletes, sedentary.

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## Introduction

Premenstrual Syndrome (PMS) is one of the most common problems in young women. PMS is defined as physical and emotional changes that occur before menstruation, affecting the normal life of a woman (ACOG, 2015). Symptoms occur in the luteal phase about 7-10 days before menstruation, progressively increasing in severity and reaching the highest level on premenstrual days and disappearing with the onset of menstrual bleeding (Taşkın, 2016). About 85% of women have one or more premenstrual symptoms (Kısa et al. 2012). Approximately 30-40% of women report symptomatic PMS requiring treatment. PMS affects women physically, emotionally, and behaviourally. Physical symptoms include fatigue, oedematous, fullness in the chest, headache, weight gain, body aches and swelling in the extremities. Emotional and behavioural symptoms include nervousness, sadness, depression, decreased concentration, and excessive sleep / insomnia (ACOG, 2015; Ryu A and Kim, 2015). In Turkey, the frequency of PMS changes between 21% and 92% (Kısa et al. 2012; Oral et al, 2012; Kahyaoğlu and Mestogullari, 2016; Karaoglu and Taşkın 2009; Goker et al. 2015). Regular exercise and relaxation techniques, adequate sleep and rest, as well as caffeine and sodium-deficient diets and vitamin supplements are recommended to cope with PMS, which adversely affects many women's health (Taşkın, 2016; Öztürk and Tanrıverdi, 2013).

Another gynaecological problem commonly seen in females is dysmenorrhea (Bano et al. 2013). Dysmenorrhea pain spreads especially in the lower abdominal region, suprapubic region, waist and upper legs (Potur and Kömürçü; 2013). Also, nausea, vomiting, diarrhoea, headache, irritability and anorexia can be seen (Bano et al. 2013). The prevalence of dysmenorrhea among young women varies from country to country, ranging from 45% to 86.9% (Potur and Kömürçü; 2013; Chia et al. 2013; Gagua et al. 2012; Kumbhar et al. 2011; Yücel et al. 2014; Shah et al. 2013; Yılmaz and Yazici 2008; Erenel and Senturk, 2007). It has

been reported that dysmenorrhea leads to school absenteeism, insomnia and skipping meals (Gagua et al. 2012), which decrease the quality of life (Kumbhar et al. 2011) and concentration and change normal physical activity (Chia et al. 2013). Dysmenorrhea treatment varies by type. Secondary dysmenorrhea treatment is aimed at removing the pathology-causing pain. Drug therapy, hot application, proper nutrition, regular exercise, regular and adequate sleep, massage are recommended in primer dysmenorrhea (Taşkın, 2016). Acupuncture, acupressure, spinal manipulation therapy, yoga, vitamin and mineral supplements, herbal therapies are among the alternative methods (Potur and Kömürçü; 2013). At present, it has not been reached a complete consensus on the causes, diagnosis and treatment methods of PMS and dysmenorrhea. There are studies that measure the effect of sports on PMS and dysmenorrhea. However, there are insufficient studies to compare PMS and dysmenorrhea in the sedentary group with the currently active sports group. In this study, it was aimed to compare athletes and sedentary students in terms of premenstrual syndrome and dysmenorrhea.

## Method

### *The Population and the Sampling*

This is a descriptive study. The universe of the study consists of 460 female students (290 students from the Nursing Department of Health College and 170 students from the Physical Education and Sports College. Physical education and sports students take courses such as swimming, gymnastics, badminton, basketball, handball, athletics, volleyball, folk dances, modern dances, field hockey and judo. It is accepted that athletes have been doing sports for at least one year and at most 4 years since they took these courses from the first grade to the 4th grade. Participation in the research was based on volunteerism and it was difficult to reach all of the students because it was applied in both departments. The participation rate in the survey was 74%. The sample of the study

consisted of 341 female students (208 students from the Nursing Department of Health College and 133 students from the Physical Education and Sports College). In the power analysis, it was determined that the effect size of the study was 3.60 and the power was 0.99 at 95% confidence interval and at a significance level of 0.05. This indicates that the sample is sufficient (Çarpık, 2014).

### Data Collection

The study was carried out at Physical Education and Sports College and Nursing Department of Health College of a university between the 1st and the 15th of May, 2016. The data of this study were collected by the researchers using the Information Form, Visual Analogue Scale (VAS) and Premenstrual Syndrome Scale (PMSS). VAS was used to measure the degree of dysmenorrhea.

Written permission was obtained from the institutions where the research was conducted. Volunteering in the study was essential. Before the study was conducted, the students were informed, and verbal consent was obtained. The study has no ethics committee approval.

### Data Collection Tools

#### Information form

Information form consists of 32 questions prepared by the researchers to determine the age, marital status, health insurance, economic status, height, weight, harmful habits, nutrition characteristics, regular sports situations and menstrual characteristics of the students.

#### Premenstrual Syndrome Scale

The Premenstrual Syndrome Scale (PMSS) is a 44-item questionnaire based on a five-point likert-type scale with scores ranging from 1 to 5. (Never, Very Slightly, Sometimes, Frequently, Continuously). The PMSS has nine sub-dimensions including Depressive Affects, Anxiety, Fatigue, Nervousness, Depressive Thoughts, Pain, Appetite Changes, Sleep Changes and Swelling. The PMSS total score is the sum of the scores of these nine sub-dimensions. The lowest score that can be taken from the scale is 44 and the highest score is 220. The higher the score, the greater the

intensity of the PMS symptoms. It is evaluated whether there is PMS according to the status of passing 50% of the highest score that can be taken from total scale and sub-dimensions (110 points). The Cronbach Alpha coefficient of the original scale was found to be 0.75 (Gençdoğan, 2016). In our study, Cronbach's alpha was found to be 0.972.

#### Visual Analogue Scale

Visual Analogue Scale (VAS); It is a scale developed by Price et al. (1983) and measures the severity of pain in the patient. The pain VAS is a continuous scale comprised of a horizontal (HVAS) or vertical (VVAS) line with a length of 10 centimeters (0 = no pain, 10 = the most severe pain). The patient is asked to mark the point corresponding to the severity of pain he feels on this line. The distance between the marking point and the lowest tip of the line (0 = no pain) is measured in centimetres and the numerical value found indicates the severity of the patient's pain (Erdine, 2000).

### Statistical Analysis

SPSS 20 package program was used to evaluate the research data. Statistical significance of the data was evaluated at  $p < 0.05$  level. Descriptive statistics (percentile, mean and standard deviation) were used to evaluate socio-demographic and menstrual characteristics, PMSS and sub-dimension scores, habits and methods used to compete with dysmenorrhea. Chi-square test was used to compare the socio-demographic and menstrual characteristics, habits and methods used to compete with dysmenorrhea of these two groups. Independent samples t-test and Mann-Whitney U test were used in order to determine whether there is a difference between two independent groups (sedentary-athletes) in terms of PMSS and sub-dimension scores, VAS scores, menarche age, height and weight. The normality of the data was determined with Kolmogorov-Smirnov Test.

### Results

Table 1 gives the distribution of socio-demographic and menstrual characteristics of the students. Sedentary and athlete students

were similar in terms of weight, marital status and economic status ( $p > 0.05$ ), but statistically significant difference was found between groups in terms of age and height averages ( $p < 0.05$ ). Menarche age of sedentary students was lower than athletes ( $p < 0.05$ ). 77.4% of the sedentary students and 67.7% of the athletes stated that the menstruation was regular ( $p > 0.05$ ). It was determined that 30.3% of

sedentary students' and 12.1% of athlete students' menstrual period lasting between 7-10 days ( $p < 0.05$ ). There was no statistically significant difference between sedentary and athlete students in terms of menstrual cycle length, dysmenorrhea story, dysmenorrhea duration, PMS story ( $p > 0.05$ ).

**Table 1.** Socio-demographic and menstrual characteristics of the students

Variables	Sedentary		Athlete		t	p
	$\bar{X}$	$\pm$ SD	$\bar{X}$	$\pm$ SD		
Age	19.98	1.40	20.52	1.70	-3.04	<b>0.003</b>
Height	163.33	6.10	166.1	6.57	-4.97	<b>0.000</b>
Weight	57.18	7.94	58.22	8.25	-1.21	0.226
<b>Menarche Age</b>	13.23 $\pm$ 1.16		13.74 $\pm$ 1.34		-3.53	<b>0.000</b>
<b>Marital Status</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>X<sup>2</sup></b>	<b>p</b>
Single	205	98.6	132	99.2	0.334	0.564
Married	3	1.4	1	0.8		
<b>Economic Situation</b>						
Low	38	18.2	30	22.5	1.04	0.592
Middle	154	74.1	92	69.2		
High	16	7.7	11	8.3		
<b>Menstruation feature</b>						
Regular	161	77.4	90	67.7	3.95	0.058
Irregular	47	22.6	43	32.3		
<b>Cycle length</b>						
20-27 day	73	35.1	54	40.6	1.529	0.676
28-34 day	95	45.7	52	39.1		
35-45 day	10	4.8	7	5.3		
Irregular	30	14.4	20	15.0		
<b>Menstruation duration</b>						
Less than 3 days	5	2.4	7	5.3	16.18	<b>0.000</b>
3-6 days	140	67.3	110	82.7		
7-10 days	63	30.3	16	12.0		
<b>Dysmenorrhea story</b>						
Yes per menstruation	86	41.3	57	42.9	0.076	0.963
Sometimes	106	51.0	66	49.6		
No	16	7.7	10	7.5		
<b>Premenstrual syndrome story</b>						
Yes per menstruation	65	31.3	37	27.8	0.464	0.793
Sometimes	90	43.3	61	45.9		
No	53	25.4	35	26.3		

Comparison of PMSS, PMSS sub-dimensions and dysmenorrhea mean scores of the students are given in Table 2. The mean PMSS score of the sedentary students is  $118.00 \pm 40.20$ , and the mean PMSS scores of the athletes is  $120.93 \pm 40.76$ . In both groups, the mean scale score is above 110 points. There were no significant differences between the groups in

terms of PMSS and sub-dimension scores of sedentary and athlete students ( $p > 0.05$ ). Mean dysmenorrhea pain score was  $5.54 \pm 2.32$  in sedentary students and  $6.15 \pm 2.85$  in athlete students and the difference between mean scores was significant ( $p < 0.05$ ).

Some habits of the students that may affect PMS and Dysmenorrhea are given in Table 3.

**Table 2.** Comparison of PMSS PMSS sub-dimensions and Dysmenorrhea Mean Scores of the Students

PMSS and its sub-dimensions	Mean Scores		t/U	p
	Sedentary $\bar{X} \pm SD$	Athlete $\bar{X} \pm SD$		
Total Score	$118.00 \pm 40.20$	$120.93 \pm 40.76$	-0.653	0.514
Depressive Affect	$18.96 \pm 8.06$	$20.33 \pm 8.40$	12590.0	0.161
Anxiety	$15.33 \pm 6.61$	$15.71 \pm 7.52$	13751.5	0.928
Fatigue	$18.12 \pm 6.63$	$17.75 \pm 6.69$	13307.5	0.554
Nervousness	$14.62 \pm 5.97$	$15.72 \pm 6.22$	12491.5	0.130
Depressive Thoughts	$17.20 \pm 7.76$	$17.12 \pm 8.19$	13575.5	0.772
Pain	$8.33 \pm 3.31$	$8.6 \pm 3.47$	13052.0	0.377
Appetite Changes	$8.74 \pm 3.65$	$8.62 \pm 3.78$	13582.5	0.778
Sleep Changes	$7.94 \pm 3.45$	$8.10 \pm 3.85$	13678.5	0.862
Swelling	$8.73 \pm 3.39$	$8.87 \pm 4.04$	13695.0	0.877
<b>Dysmenorrhea (VAS Score)</b>	$5.54 \pm 2.32$	$6.15 \pm 2.85$	12031.0	<b>0.041</b>

Smoking, alcohol consumption, coffee consumption, vitamin supplementation and regular sports activities were lower in sedentary students than in athletes, and the difference between the groups was statistically significant ( $p < 0.05$ ). There was no statistically significant difference between sedentary and athlete students in terms of coke consumption, chocolate consumption, tea consumption, salt consumption, milk consumption and fruit consumption frequency ( $p > 0.05$ ). However, cereal/legume consumption of sedentary students was higher than athlete students and

the difference between them was statistically significant ( $p < 0.05$ ).

The methods used to cope with dysmenorrhea are given in Table 4. 84.6% of the sedentary students and 83.5% of the athletes used the method to deal with dysmenorrhea. There was no difference in the method usage between the two groups ( $p > 0.05$ ). However, there are differences in the methods used. Sedentary students rested more (64.1%) and used more painkillers (45.2%) than the athlete students ( $p < 0.05$ ).

**Table 3.** Some habits of the students that may affect PMS and Dysmenorrhea

Habits	Sedentary		Athlete		X <sup>2</sup>	p
	n	%	n	%		
<b>Cigarette consumption</b>						
No	191	91.8	96	72.2	28.84	<b>0.000</b>
1-10 times a day	5	2.4	24	18.0		
11 times a day	12	5.8	13	9.8		
<b>Alcohol consumption</b>						
No	203	97.6	105	78.9	32.63	<b>0.000</b>
Rare	5	2.4	28	21.1		
<b>Coke consumption</b>						
Yes	83	39.9	61	45.9	1.26	0.531
No	34	16.3	21	15.8		
Sometimes	91	43.8	51	38.3		
<b>Coffee consumption</b>						
Yes	136	65.4	97	72.9	12.48	<b>0.002</b>
No	7	3.4	13	9.8		
Sometimes	65	31.2	23	17.3		
<b>Chocolate consumption</b>						
Yes	180	86.5	107	80.4	4.088	0.130
No	2	1.0	5	3.8		
Sometimes	26	12.5	21	15.8		
<b>Tea Consumption</b>						
Yes	177	85.1	103	77.4	4.762	0.092
No	7	3.4	11	8.3		
Sometimes	24	11.5	19	14.3		
<b>Excess salt consumption</b>						
Yes	39	18.8	35	26.3	5.872	0.053
No	123	59.1	61	45.9		
Sometimes	46	22.1	37	27.8		
<b>Milk consumption</b>						
Yes	140	67.3	95	71.4	1.362	0.506
No	13	6.3	10	7.5		
Sometimes	55	26.4	28	21.1		
<b>Fruit consumption</b>						
Yes	170	81.7	101	75.9	1.742	0.419
No	3	1.5	2	1.5		
Sometimes	35	16.8	30	22.6		
<b>Cereal /legume consumption</b>						
Yes	166	79.8	86	64.6	12.55	<b>0.002</b>
No	7	3.4	15	11.3		
Sometimes	35	16.8	32	24.1		
<b>Vitamin supplement</b>						
Yes	37	17.8	35	26.3	7.139	<b>0.028</b>
No	155	74.5	81	60.9		
Sometimes	16	7.7	17	12.8		
<b>Doing Regular sport</b>						
Yes	11	5.3	57	42.9	122.10	<b>0.000</b>
No	157	75.5	23	17.3		
Sometimes	40	19.2	53	39.8		



**Discussion**

In the study the PMS score mean of the sedentary students was found to be lower than the athlete students. The scale score was lower in four studies (Kısa et al., 2012; Guvenc et al. 2012; Tarı Selçuk et al., 2014; Öztürk et al., 2011) in which PMS was evaluated using the same measurement tool, and the study of Arıöz and Ege (2013) had higher score (Arıöz and Ege, 2013). In the treatment of PMS, aerobic exercises with appropriate severity, frequency and duration are used by taking advantage of the regulatory effect of exercise on the hormonal system. Particularly recommended exercises include cycling, swimming and walking. The American Academy of

Gynaecology and Obstetrics noted that regular aerobic exercises are effective in reducing PMS symptoms (ACOG, 2015). Therefore, it is thought that PMS complaints will be less in a group that has already spent most of its training in sports.

However, there was no difference between the groups in terms of PMSS scale and sub-dimension scores in sedentary and athlete students ( $p>0.05$ ). In Onat Bayram's study (2007), it was determined that the athlete women had lower PMS and dysmenorrhea complaints than sedentary women (Onat Bayram, 2007). In the study of Karaoglu and Tasgin (2009), it has been determined that sports have no effect on PMS and the results of this study are similar to ours (Karaoglu and Taşgin, 2009).

**Table 4.** The Methods Used to Cope with Dysmenorrhea

Method	Sedentary		Athlete		X <sup>2</sup>	p
	n	%	n	%		
No	32	15.4	22	16.5	0.081	0.764
Yes	176	84.6	111	83.5		
<b>Method Used *</b>						
Resting	133	64.1	37	27.8	42.3	<b>0.000</b>
Hot Application(abdomen)	81	38.9	43	32.3	1.53	0.249
Using Painkillers	94	45.2	41	30.8	7.00	<b>0.009</b>
Listen to Music	15	7.2	8	6.0	0.185	0.826
Walking	15	7.2	7	5.3	0.51	0.652
Take a Hot Shower	36	17.3	15	11.3	2.31	0.161
Exercise	12	5.8	6	4.5	0.25	0.805
Bath	4	1.9	1	0.8	0.77	0.652
Change of Nutrition	1	0.5	1	0.8	0.102	1.000
Using Oral Contraceptives	-	-	1	0.8	1.56	0.389

\* More than one answer has been given.

Kroll-Desrosiers et al. (2017) found no association between physical activity and either premenstrual symptom scores or the prevalence of premenstrual syndrome (Kroll-Desrosiers et al., 2017). In a study, there was no difference between the activity level and PMS (Matin et al., 2014). But the results of some studies made in the field are different from our work. In the study of Safarzadeh et al. (2016), it was determined that regular

physical exercise and sports were effective in preventing PMS (Safarzadeh et al., 2016). Ghanbari, Minshawi and Jafarabadi (2008) reported that regular aerobic exercise effectively reduces the intensity of PMS symptoms (Ghanbari et al., 2008). Other studies have also shown that physical exercise reduces PMS symptoms (Koushkie et al., 2008; Haghghi et al., 2015).

It was determined that the middle aerobic exercise reduced both premenstrual distress symptoms and luteal phase over hormone levels (Stoddard et al., 2007). On the other hand in another study it was determined that the duration and intensity of competitive exercises increased the prevalence of PMS (Czajkowska et al., 2015).

Regular exercise is recommended in the treatment of primary dysmenorrhea (Taşkın, 2016). In our study, the frequency of dysmenorrhea was similar for athletes and sedentary students. However, the mean score of dysmenorrhea pain scores of sedentary students was lower than that of athletes. The results of the studies in the field vary. Aykut et al. (2007) and Matin et al. found that physical exercise did not affect dysmenorrhoea (Aykut et al., 2007; Matin et al., 2014). In another study, however, regular aerobic exercise was reported to reduce dysmenorrhoea complaints (Kroll-Desrosiers et al., 2017). The low pain scores in the sedentary group in our study may be due to the fact that they use both pharmacological methods to cope with the pain and the use of more than one method. It can also be explained by the fact that harmful habits such as harmful nutrition and smoking-alcohol use are less in the sedentary group.

The aim of treatment of PMS is to relieve the symptoms (Ryu and Kim, 2015). Especially in the luteal phase of menstruation, it is suggested to reduce the consumption of fat, caffeine (tea, coffee and coke), chocolate, sugar, sodium for the prevention of oedema and fluid retention. Also a balanced diet and exercise with natural diuretics is recommended for alleviating premenstrual symptoms (Taşkın, 2016; Karaca and Beji, 2015). It is also advisable to reduce or eliminate the use of alcohol and cigarettes to deal with PMS symptoms (Karaca and Beji, 2015; Öztürk et al., 2011). In this study; coke, coffee, salt, cigarettes and alcohol consumption were higher in athlete students. In addition, cereal/legume and fruit consumption frequency of sedentary students was higher than athlete students. Tarı Selçuk et al. (2014) found smokers and alcohol users to have a

higher PMSS score in their study (Tarı Selçuk et al., 2014). In a study by Oral et al. (2012), the consumption of high carbohydrate food was found to be associated with high premenstrual symptom scores, but this relationship was not found to be in dysmenorrhea (Oral et al., 2012). Studies indicate the importance of fruit and vegetable consumption in decreasing dysmenorrhea and PMS (Tavallaee et al., 2011). The cause of having more PMS symptoms and dysmenorrhea in the athlete group may be attributed to some harmful habits of the students. 84.6% of the sedentary students and 83.5% of the athlete students stated that they used a method to deal with dysmenorrhea, and statistically no difference was observed between the two groups in terms of using a method. However, differences were found in terms of the methods used. Sedentary students were found to rest more (64.1%) and used more painkillers (45.2%) than the athlete students ( $p < 0.05$ ) and it was also noted that sedentary students used more than one method to cope with pain. Gun, Demirci and Ortar (2014) determined that, hot application to abdomen (67.2%), massage (42.6%) and hot application to the feet (50.9%) were the most frequent methods for women to cope with dysmenorrhea 40.

In the same study, painkiller use rate was 51.7% (Gun et al., 2014) 40. In the study of Ozturk et al. (2011), painkiller use rate was 57.1 % (Tanrıverdi and Erci, 2011). Our findings may suggest that the students do not know or not use the non-pharmacological methods adequately to cope with PMS and dysmenorrhea.

### Conclusion and Recommendations

In this study, it was determined that sedentary and athlete students were similar in terms of PMS and dysmenorrhea and athlete students had higher dysmenorrhea pain scores. PMSS scores and dysmenorrhea are thought to be similar in both groups. This may be due to the characteristics of the students' nutrition and harmful habits. In addition, it was determined that the reason of lower dysmenorrhea pain



score in the sedentary group, may be their using pharmacological methods more and using more than one method. These findings suggest that both groups are affected by PMS and dysmenorrhea and that they cannot be treated adequately.

Teaching pharmacological and non-pharmacological coping methods to students with PMS and dysmenorrhea may be beneficial to relieve the symptoms.

Nurses have an important role in diagnosing PMS and dysmenorrhea and planning and giving care for symptoms. Nurses have responsibility to identify the problems experienced related with PMS and dysmenorrhea and to inform women about the ways to cope with dysmenorrhea, non-pharmacological methods (such as exercise and nutrition) and pharmacological methods (such as taking diuretics, analgesics and tranquilizers according to the physician's recommendation). Although the findings of the study did not show the effectiveness of sports, it is remarkable in terms of revealing the need to reduce harmful habits such as the use of coke, coffee, salt, smoking and alcohol. The study is striking in terms of demonstrating that non-pharmacological methods are not known or used sufficiently by the students.

Teaching pharmacological and non-pharmacological coping methods to students with PMS and dysmenorrhea may be beneficial to relieve the symptoms. Further research is needed to clarify the causes of PMS and dysmenorrhoea, and more specifically, the impact of athletic activity on prevention. Planning of experimental studies in which randomization is provided for the variables that may affect PMS and dysmenorrhoea can be suggested.

#### Limitation of study

In this study, there is no data record about the duration, frequency and severity of sports. Only the data based on the students' own expressions were taken. Also, the participation rate of the students to the research is low. For

this reason, the data cannot be generalized. The fact that the students in the sedentary group are nursing students can also change their protective behaviours in PMS and dysmenorrhea.

**Ethics Committee Approval:** Written permission was obtained from the institutions where the research was conducted. Volunteering in the study is essential. Before the study was conducted, students were informed and verbal consent was obtained.

**Referee/ Peer-review:** External referee evaluation.

**Author Contributions:** Idea / concept: BK, AK; Design: BK, AK; Consulting: BK, MK; Data addition: BK, MK; Data processing: BK, MK ; Analysis and / or Comment: BK, AK, MK; Source search: BK; Manuscript Writing: BK, AK; Critical review: BK, AK.

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#### What did the study add to the literature?

- Dysmenorrhea was higher in athletes in the study.
- There was no difference in premenstrual symptom scores between the two groups.
- Sedantary students were using more methods to deal with dysmenorrhea.

#### References

- Aba YA, Ataman H, Dişsiz M, Sevimli S. (2018). Genç kadınlarda premenstrual sendrom, fiziksel aktivite ve yaşam kalitesi. *JAREN*, 4(2),75-82.
- ACOG (2015). Premenstrual Syndrome (PMS). From, <http://www.acog.org/Patients/FAQs/Premenstrual-Syndrome-PMS#what>
- ARİÖZ A, Ege E. (2013). Premenstrüel sendrom sorunu olan üniversite öğrencilerinde, semptomların kontrolü ve yaşam kalitesinin artırılmasında eğitimin etkinliği. *Genel Tıp Dergisi*, 23, 63-69.
- Aykut M, Günay O, Gün I, Tuna R, Balcı E, Özdemir M, Öztürk Y. (2007). The impact of some biological, socio-demographic and nutritional factors on the prevalence of dysmenorrhoea. *Erciyes Medical Journal*, 29, 393-402.

- Bano R, AlShammari E, Aldeabani HKS. (2013). Study of the prevalence and severity of dysmenorrhea among the university students of hail city. *International Journal of Health Sciences and Research*, 3(10), 15-22.
- Chia CF, Lai JH, Cheung PK, Kwong LT, Lau FP, Leung KH, et al. (2013). Dysmenorrhoea among Hong Kong university students, prevalence, impact, and management. *Hong Kong Medical Journal*, 19(3), 222-228
- Czajkowska M, Drosdzol-Cop A, Gałazka I, Naworska B, Skrzypulec-Plinta V. (2015). Menstrual Cycle and the Prevalence of Premenstrual Syndrome/Premenstrual Dysphoric Disorder in Adolescent Athletes. *Journal of Pediatric Adolescent Gynecology*, 28(6), 492-498.
- Cantürk Ç. (2014). İstatistiksel güç analizi ve hemşirelik araştırmalarında kullanımı: temel bilgiler, *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, 17(4), 268-274.
- Erdine S. (2000). Ağrı. Nobel Tıp Kitapevleri. Alemdar Ofset Savaş Ciltevi, İstanbul, 37-40.
- Erenel A, Senturk I. (2007). Health high school students experienced dysmenorrhoea and their applications to cope with it. *Journal of Hacettepe University School of Nursing*, 12, 48-60.
- Gagua T, Tkeshelashvili B, Gagua D. (2012). Primary dysmenorrhea, prevalence in adolescent population of Tbilisi, Georgia and risk factors. *Journal of the Turkish-German Gynecological Association*, 13(3), 162-168.
- Gençdoğan B. (2006). Premenstrual sendrom için yeni bir ölçek. *Türkiye’de Psikiyatri*, 8(2), 81-87.
- Ghanbari Z, Manshavi FD, Jafarabadi M. (2008). The effect of three months regular aerobic exercise on premenstrual syndrome. *Journal of Family and Reproductive Health*, 2(4), 167-171.
- Goker A, Artunc-Ulkumen B, Aktenk F, Ikiz N. (2015). Premenstrual syndrome in Turkish medical students and their quality of life. *Journal of Obstetrics and Gynaecology*, 35(3), 275-278.
- Gun C, Demirci N, Otrar M. (2014). Dismenore yönetiminde tamamlayıcı alternatif tedavileri kullanma durumu. *Spatula DD*, 4(4), 191-197.
- Guvenc G, Kilic A, Akyuz A, Ustunsoz A. (2012). Premenstrual syndrome and attitudes toward menstruation in a sample of nursing students. *Journal of Psychosomatic Obstetrics and Gynecology*, 33(3), 106-111.
- Haghighi ES, Jahromi MK, Daryano FO. (2015). Relationship between cardiorespiratory fitness, habitual physical activity, body mass index and premenstrual symptoms in collegiate students. *Journal of Sports Medicine Physical Fitness*, 55(6), 663-667.
- Kahyaoğlu Sut H, Mestogullari E. (2016). Effect of premenstrual syndrome on work-related quality of life in Turkish nurses. *Saf Health Work*, 7(1), 78-82.
- Karaca PP, Beji NK. (2015). Premenstrual sendromunun tanı ve tedavisinde kanıt temelli yaklaşımlar ve hemşirelik bakımı. *Balıkesir Sağlık Bilimleri Dergisi*, 4(3), 178-186.
- Karaoglu N, Taşgın Ö. (2009). Premenstrual Syndrome in physically active and inactive university students. *e-Journal of New World Sciences Academy*, 4(2), 115-123.
- Kısa S, Zeyneloğlu S, Güler N. (2012) Üniversite öğrencilerinde premenstrual sendrom görülme sıklığı ve etkileyen faktörler. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*, 1(4), 284-297.
- Koushkie Jahromi M, Gaeini A, Rahimi Z. (2008). Influence of a physical fitness course on menstrual cycle characteristics. *International Society Gynecological Endocrinology*, 24(11), 659-662.
- Kroll-Desrosiers AR, Ronnenberg AG, Zagarins SE, Houghton SC, Takashima-Uebelhoer BB, Bertone-Johnson ER. (2017). Recreational physical activity and premenstrual syndrome in young adult women, A Cross-Sectional Study. *PLoS One*, 12(1), e0169728.
- Kumbhar SK, Reddy M, Sujana B, Reddy R, Bhargavi DK, Balkrishna C. (2011). Prevalence of dysmenorrhea among Adolescent girls (14-19 yrs) of kadapa district and its impact on quality of life, A cross sectional study. *National Journal of Community Medicine*, 2(2), 265-268.
- Matin HH, Sehhati SF, Zoodfekar, L. (2014). Comparing menarche age, menstrual regularity, dysmenorrhea and analgesic consumption among athletic and non-athletic female students at Universities of Tabriz-Iran. *International Journal of Women’s Health and Reproduction Sciences*, 2, 307-310.

- Onat Bayram G. (2007). Sporcuların premenstrual sendrom yönünden sedanter bayanlarla karşılaştırılması. *Bakırköy Tıp Dergisi*, 3,104-110.
- Oral E, Kirkan T, Yazici E, Cansever MGZ, Aydın N. (2012) Premenstrual symptom severity, dysmenorrhea, and school performance in medical students. *Journal of Mood Disorders*, 2(4),143-152.
- Öztürk S, Tanrıverdi D, Erci B. (2011). Premenstrual syndrome and management behaviours in Turkey. *Australian Journal of Advanced Nursing*, 28(3), 54-60.
- Öztürk S, Tanrıverdi D. (2010). Premenstrual sendrom ve başetme. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, 13(3), 57-61.
- Potur DC, Kömürcü N. (2013). Dismenore yönetiminde tamamlayıcı tedaviler. *Hemşirelikte Eğitim ve Araştırma Dergisi*, 10 (1), 8-13.
- Ryu A, Kim TH. (2015). Premenstrual syndrome, A mini review. *Maturitas*, 82(4),436-440.
- Safarzadeh A, Zare S, Arbabisarjou A, Ghoreishinia G. (2016). The relationship between Exercise and premenstrual syndrome. *Health Sciences*, 5(9),183-189.
- Shah M, Monga A, Patel S, Shah M, Bakshi H. (2013). A study of prevalence of primary dysmenorrhea in young students-a cross-sectional study. *Healthline. Journal of Indian Association of Preventive and Social Medicine*, 4(2),30-34.
- Stoddard JL, Dent CW, Shames L, Bernstein L. (2007). Exercise training effects on premenstrual distress and ovarian steroid hormones. *European Journal of Applied Physiology*, 99(1), 27-37.
- Tarı Selçuk K, Avcı D, Alp Yılmaz F. (2014). The prevalence of premenstrual syndrome among nursing students and affecting factors. *Journal of Psychiatric Nursing*, 5(2), 98-103.
- Taşkın L. (2016). Üreme siklusu anomalileri, Doğum ve Kadın Sağlığı Hemşireliği, Genişletilmiş XIII. Baskı, Akademisyen Tıp Kitapevi, Ankara. S.733-738.
- Tavallae M, Joffres MR, Corber SJ, Bayanzadeh M, Rad MM. (2011). The prevalence of menstrual pain and associated risk factors among Iranian women. *Journal of Obstetrics and Gynaecology Research*, 37(5), 442-451.
- Yılmaz T, Yazici S. (2008). Characteristics of dysmenorrhea situations of midwifery and nursing students. *Journal of Anatolia Nursing and Health Sciences*, 11, 1-8.
- Yücel U, Özdemir R, Gülhan İ, Çeber E, Eser S. (2014). İzmir İli Bornova ilçesinin üç kentsel mahallesinde dismenore sıklığı ve etkileyen faktörler, toplum tabanlı bir çalışma. *Türkiye Klinikleri Hemşirelik Bilimleri*, 6(2), 87-93.